

# 2017 National Technical Training Program – Customer



# FOREWORD

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Penske Power Systems' (PPS) market leading product portfolio from MTU, Detroit and Allison Transmissions delivers low lifecycle costs, improved fuel economy, and more up-time to customers.

To ensure that PPS's products are operated and maintained to peak condition, we delivery factory-backed technical training to ensure that our customers are coached on the latest technologies and product advances.

This year we will introduce a new range of courses for operators and maintainers, while continuing to provide training that is tailored to suit our customers' specific needs. Throughout 2017 we will operate to a progressing schedule, keeping in-step with any updates to our products and services.

While our courses are conducted through PPS's state-of-the-art training centres, located in Sydney, Melbourne, Brisbane and Perth, we also deliver onsite training where required (additional charges may apply).

The following program outlines all courses and curriculum details, as well as prerequisites and conditions for courses.

PPS strives to deliver informative, flexible and cost effective training to suit its customers and we welcome your feedback to enhance the customer learning experience.

Thank you,

**Bob Akers**  
National Technical Training Manager  
Penske Power Systems.

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# TRAINING CENTRES & CONTACTS

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## NEW SOUTH WALES TRAINING CENTRE

### Sydney

1/7 Killo Crescent  
Glendenning NSW 2761  
Phone: +61 2 8602 6300  
Fax: +61 2 8602 6390

#### Contacts:

Shaun Davis – Training Manager  
Valerie Adefuin – Learning and Development Coordinator

## VICTORIA TRAINING CENTRE

### Melbourne

488 Blackshaws Road  
Altona North VIC 3025  
Phone: +61 3 9243 9269  
Fax: +61 3 9243 9271

#### Contact:

William Galea – Training Manager

## WESTERN AUSTRALIA TRAINING CENTRE

### Perth

22 Stockyards Lane  
Hazelmere WA 6055  
Phone: +61 8 9273 7787  
Fax: +61 8 9274 1051

#### Contact:

Mark Scott – Training Manager

## QUEENSLAND TRAINING CENTRE

### Brisbane

196 Viking Drive  
Wacol QLD 4076  
Phone: +61 7 3877 6053  
Fax: +61 7 3877 6092

#### Contact:

Russell Koch – Training Manager  
James Fuller – Electronics Manager

# TRAINING REQUEST FORM

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Please complete the request form below and return it to the nearest Penske Power Systems Training Centre. Once course numbers are confirmed you will receive a training offer outlining all dates and locations available. On acceptance of the training offer your position on the course will be confirmed.

**Applicant Name**

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**Applicant Email Address**

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**Employer Name**

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**Employer Address**

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**Suburb/Town**

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**Postcode**

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**Company Contact**

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**Employer Phone No**

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**Employer Email Address**

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**Training Program**

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**Preferred Program Location**

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For any additional enquiries or to submit your registration, please contact the National Technical Training team.

Email: [technicaltraining@penskeps.com](mailto:technicaltraining@penskeps.com)

Phone: +61 2 8602 6300

Fax: +61 2 8602 6390





# MTU COURSES

## (INCLUDING MERCEDES-BENZ)

### CUSTOMER MECHANICAL PROGRAMS CM0/X

Series	C&I	Genset	Marine	Rail
OM Series	x	-	-	-
60	x	-	x	-
1000	x	-	-	-
1100-1500	X	-	-	-
1600	-	x	-	-
2000 PLD	x	x	x	-
2000 CR	-	-	x	-
4000-01	x	x	x	-
4000-02	x	x	-	-
4000-03	x	x	-	x

#### COURSE OUTLINE

- Engine operation and related systems
- Identification and remedy of minor faults
- Preventative maintenance tasks

#### TARGET TRAINEES

Operators and Maintainers

#### PREREQUISITE

- Basic knowledge of diesel engines and course language

#### CURRICULUM

- Handling of documentation
- Introduction of the engine
- Explanation of the engine systems
- Explanation of fluid and lubricant specification
- Basic troubleshooting
- Preventative maintenance
- Introduction to engine management system

#### PARTICIPANTS

Four to eight

#### DURATION

Upon request

#### COURSE FEE

Upon request

### CUSTOMER MECHANICAL PROGRAMS CM1/X

#### Qualification Level QL1: Preventative Maintenance

Series	C&I	Genset	Marine	Rail	Duration
OM Series	x	-	-	-	2 days
60	x	-	x	-	2 days
1000	x	-	-	-	5 days
1100-1500	x	-	-	-	5 days
1600	-	x	-	-	3 days
2000 PLD	x	x	x	-	3 days
2000 CR	-	-	x	-	3 days
4000-01	x	x	x	-	3 days
4000-02	x	x	-	-	3 days
4000-03	x	x	-	x	3 days

#### COURSE OUTLINE

- Engine design, structure and function
- Engine operation and related systems
- Identification and remedy of minor faults
- Preventative maintenance tasks

#### TARGET TRAINEES

Operators and Maintainers

#### PREREQUISITE

- Basic knowledge of diesel engines and course language

#### CURRICULUM

- Handling of documentation
- Design and function of the engine
- Air, fuel, lubrication and cooling systems
- Fluid and lubricant specifications
- Basic troubleshooting
- Preventative maintenance tasks QL1
- Introduction to engine management system

#### PARTICIPANTS

Four to eight

#### COURSE FEE

Upon request

### ECU-7 CE1/C (CONSTRUCTION & INDUSTRIAL)

#### COURSE OUTLINE

- Function and design of the ECU-7 electronic control system
- Use Diasys 2.50 for diagnostic codes and to create, save and view log files
- Use diagnostic equipment and documentation to troubleshoot the Engine Control Unit-7 (ECU-7) system

#### TARGET TRAINEES

Operators and Maintainers

#### CURRICULUM

- Introduction to the Motive Line System
- Design and function of the ECU-7
- Design and function of the Power Output Module (POM)
- Engine controls
- Design and function of the Service Application Mode (SAM)
- Vehicle interface
- Handling of documentation and drawing
- Design and function of Diasys
- Overview of parameters
- Troubleshooting

#### PARTICIPANTS

Four to eight

#### DURATION

Two days

#### COURSE FEE

Upon request

# MTU COURSES

## (INCLUDING MERCEDES-BENZ)

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### TEMIC CE1/C

#### COURSE OUTLINE

- Diagnose, service and repair the TEMIC engine control system fitted to the Mercedes-Benz OM series engines

#### TARGET TRAINEES

Service and Workshop Personnel

#### PREREQUISITES

- Basic understanding of computer operating systems
- Electronic operating principles

#### CURRICULUM

- Operational theory and practical application of TEMIC system
- Basic electrical principles and wiring schematics
- Practical experience in harness repair
- System troubleshooting techniques
- Correct use of diagnostic equipment

#### PARTICIPANTS

Four to eight

#### DURATION

Two days

#### COURSE FEE

Upon request

### XENTRY CE0/C

#### COURSE OUTLINE

- At the completion of this program, students will be able to troubleshoot, repair and change parameters on the Mercedes Benz Temic Electronic Control System using the XENTRY Diagnostic Tool.

#### TARGET TRAINEES

Service and Workshop Personnel

#### PREREQUISITE

- Basic knowledge of diesel engines and course language
- Basic understanding of computer operating systems
- Basic understanding of electrical principles

#### CURRICULUM

- Introduction to the Temic system, as used on the OM900 Series engine
- System layout
- Principles of operation
- Location and function of Temic components
- System features
- Troubleshooting of Temic faults
- MR & ADM2 parameter sets
- Handling of documentation

#### PRACTICAL ACTIVITIES:

- Identifying the location of all Temic components
- Using the Xentry software to access engine values, codes & service routines
- Handling parameter sets
- Troubleshooting Temic faults using the appropriate diagnostic equipment and literature

#### PARTICIPANTS

Four to Eight

#### DURATION

One day

#### COURSE FEE

Upon request

### AVAILABLE UPON REQUEST

The following engine training programs are no longer scheduled, however are available upon customer request

#### DETROIT

- Series 53/71/92 Familiarisation

#### MTU

- 183 CM1-M Marine Familiarisation
- Series 60 CM1/M Marine

#### VM MOTORI

- D700 Series Engine Familiarisation

#### PARTICIPANTS

Four to eight

#### DURATION

Available on request

#### COURSE FEE

Upon request



# MTU COURSES

## (INCLUDING MERCEDES-BENZ)

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### MTU ELECTRONICS

At Penske Power Systems we offer courses to meet both your operators (CE1) and on board maintainers (CE2) needs in the support of the MTU Electronic Engine Control Systems and MTU Engine Monitoring and Control Systems.

Training for the following systems is supported from our Training Centre located in Brisbane;

#### ENGINE CONTROL SYSTEM

- ECS 4 (MDEC)
- ECS 7 (ADEC)
- ECS 8 (ADEC for 1600 Series)

#### ENGINE MONITORING SYSTEM

- SmartLine
  - BlueLine
- BlueVision

### CE1

#### COURSE OUTLINE

- Proficiency in system function and set-up
- Operation of the system

#### TARGET TRAINEES

Operators

#### PREREQUISITE

- Knowledge of main system functions
- Technical comprehension

#### CURRICULUM

- Introduction to the scope of electronics
- Handling of documentation and drawings
- System structure, design and operations
- Troubleshooting via display navigation

#### SCHEDULE

To be agreed

#### PARTICIPANTS

Up to eight persons

#### LOCATION

Penske Power Systems

#### TRAINING TIME

8.00AM – 4.00PM

#### COURSE FEE

Upon request

### CE2

#### COURSE OUTLINE

- System maintenance
- Troubleshooting and corrective action
- Using test/measurement equipment

#### TARGET TRAINEES

Maintainer

#### PREREQUISITE

- Mechanics or electronics system knowledge

#### CURRICULUM

- Introduction to the scope of electronics
- Handling of documentation and drawings
- System structure, design and operations
- Explanation of sensors and actuators
- System configuration
- Replacing complete units
- Introduction of the dialogue unit (basic level)
- Data recording and error codes
- Troubleshooting via display navigation and dialogue unit

#### SCHEDULE

To be agreed

#### PARTICIPANTS

Up to eight persons

#### LOCATION

Penske Power Systems

#### TRAINING TIME

8.00AM – 4.00PM

#### COURSE FEE

Upon request

# DETROIT COURSES

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## SERIES 60 LEGACY MAJOR REPAIR

### COURSE OUTLINE

Provide service personnel with the skills and knowledge required to carry out maintenance, troubleshooting and repairs specific to the Series 60 non-EGR engine

### TARGET TRAINEES

Service and Workshop Personnel

### PREREQUISITE

- Basic knowledge of diesel engines and course language

### CURRICULUM

- Theory and operation of the Series 60 engine range
- Basic engine principles for fuel, air, lube and cooling systems
- Troubleshooting

### PRACTICAL ACTIVITIES

- Injector replacement
- Camshaft replacement
- Camshaft thrust collar seal replacement
- Cylinder head replacement
- Adjustable idler gear backlash setting
- Engine timing verification
- Tune-up procedures

### PARTICIPANTS

Four to eight

### DURATION

Three days

### COURSE FEE

Upon request

## DDEC IV DIAGNOSTICS

### COURSE OUTLINE

Provide tradespersons with the skills necessary to diagnose, service and repair DDEC Single ECM – Engine Control System

### TARGET TRAINEES

Service and Workshop Personnel

### PREREQUISITES

- Basic understanding of computer operating systems
- Basic understanding of electrical principles

### CURRICULUM

- Electrical circuit testing principles
- DDEC system design and function
- Diagnostic code evaluation
- DDL Diagnostic Tool functions
- Handling of documentation

### PRACTICAL ACTIVITIES

- Wiring harness repairs
- Practical DDEC troubleshooting exercises
- Electrical circuit testing
- Diagnostic tool use

### PARTICIPANTS

Four to eight

### DURATION

Two days

### COURSE FEE

Upon request

## ADR80/02 SERIES 60 UPDATE

### COURSE OUTLINE

To update service personnel with the skills and knowledge required to carry out maintenance, troubleshooting and repairs specific to the ADR80/02 on-highway Series 60 engine fitted with EGR

### TARGET TRAINEES

Service and Workshop Personnel

### PREREQUISITES

- Series 60 Legacy Major Repair

### CURRICULUM

- Exhaust emission standards
- Series 60 evolution
- Engine construction
- EGR air intake system
- Fuel, lube and cooling systems
- Tune-up procedure
- Troubleshooting
- Special tools

### PRACTICAL ACTIVITIES

- Partial engine disassembly/reassembly
- Engine timing verification
- Engine tune-up

### PARTICIPANTS

Four to eight

### DURATION

Two days

### COURSE FEE

Upon request

# DETROIT COURSES

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## DDEC VI DIAGNOSTICS

### COURSE OUTLINE

Provide service personnel with the skills and knowledge required to troubleshoot and repair the DDEC VI electronic control system as fitted to Series 60 ADR80/02 and DD Series engines

### TARGET TRAINEES

Service and Workshop Personnel

### PREREQUISITES

- DDEC IV Diagnostics

### CURRICULUM

- DDEC VI system design and function
- Diagnostic code evaluation
- Use of Diagnostic Tool
- Handling of documentation
- Wiring harness identification and repairs

### PRACTICAL ACTIVITIES

- Identification of components
- Circuit identification and testing
- Utilisation of DDDL (current version)
- Practical troubleshooting exercises

### PARTICIPANTS

Four to eight

### DURATION

Two days

### COURSE FEE

Upon request

## MBE 4000 MAJOR REPAIR

### COURSE OUTLINE

Provide service personnel with the skills and knowledge required to carry out maintenance, troubleshooting and repairs specific to the Series MBE 4000 engine

### TARGET TRAINEES

Service and Workshop Personnel

### PREREQUISITE

- Basic knowledge of diesel engines and course language

### CURRICULUM

- Theory and operation of the MBE series engine range
- Basic engine principles for fuel, air, lube and cooling systems
- Troubleshooting
- Tune-up procedures
- Partial engine disassembly/reassembly
- Overview of upgrade to meet the requirements of ADR80/02

### PARTICIPANTS

Four to eight

### DURATION

Three days

### COURSE FEE

Upon request

## DDEC FOR MBE 4000

### COURSE OUTLINE

Provide tradespersons with the skills necessary to diagnose, service and repair DDEC system for MBE 4000

### TARGET TRAINEES

Service and Workshop Personnel

### PREREQUISITES

- MBE 4000 Major Repair
- Basic understanding of computer operating systems and electronic operating principles

### CURRICULUM

- Electrical circuit testing principles
- DDEC system design and function
- Diagnostic code evaluation
- Use of Diagnostic Tool
- Handling of documentation Practical DDEC troubleshooting exercises
- Wiring harness repairs

### PARTICIPANTS

Four to eight

### DURATION

Two days

### COURSE FEE

Upon request

# DETROIT COURSES

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## DD13 & DD15 MAINTENANCE

### **COURSE OUTLINE**

Exposes tradespersons and advanced apprentices to the skills necessary to diagnose and service Detroit engines

### **TARGET TRAINEES**

Operators and Maintainers

### **PREREQUISITE**

- Basic knowledge of diesel engines and course language

### **CURRICULUM**

- Identification and external components
- Systems overview
- Fluid and lubrication requirements
- Preventative maintenance
- Code handling and regeneration procedure

### **PRACTICAL ACTIVITIES**

- Engine walk-around
- Demonstration of preventative maintenance
- Demonstration of code handling and regeneration procedure

### **PARTICIPANTS**

Four to eight

### **DURATION**

Four hours

### **COURSE FEE**

Upon request

# ALLISON TRANSMISSION COURSES

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## ALLISON 1000 & 2000 MAINTENANCE

### COURSE OUTLINE

Maintenance and basic troubleshooting of the 1000 and 2000 Series transmissions fitted with 4th generation electronic control

### TARGET TRAINEES

Qualified Tradesperson  
(or 3rd/4th Year Apprentices)

### CURRICULUM

- Product familiarisation
- Basic construction
- Torque convertor operation and stall testing procedure
- Planetary gear set and clutch operation
- Hydraulic operation
- Basic electrical circuit testing
- Operation of the 4th generation electronic control system
- Troubleshooting of mechanical, hydraulic and electronic faults
- Maintenance requirements/servicing procedures

### PRACTICAL ACTIVITIES

- Identifying all external mechanical and electronic components
- Performing a stall test and hydraulic pressure test
- Using Allison DOC diagnostic software
- Performing fault finding on the electronic control system

### PARTICIPANTS

Four to eight

### DURATION

Two days

### COURSE FEE

Upon request

## ALLISON 3000 & 4000 MAINTENANCE

### COURSE OUTLINE

Maintenance and basic troubleshooting of the 3000 and 4000 Series transmissions fitted with 4th generation electronic control

### TARGET TRAINEES

Qualified Tradesperson  
(or 3rd/4th Year Apprentices)

### CURRICULUM

- Product familiarisation
- Basic construction
- Torque convertor operation and stall testing procedure
- Planetary gear set and clutch operation
- Hydraulic operation
- Basic electrical circuit testing
- Operation of the 4th Generation electronic control system
- Troubleshooting of mechanical, hydraulic and electronic faults
- Maintenance requirements/servicing procedures

### PRACTICAL ACTIVITIES

- Identifying all external mechanical and electronic components
- Performing a stall test and hydraulic pressure test
- Using the shift selector to retrieve diagnostic information
- Using Allison DOC diagnostic software
- Performing fault finding on the electronic control system

### PARTICIPANTS

Four to eight

### DURATION

Two days

### COURSE FEE

Upon request

## ALLISON 6000 MAINTENANCE

### COURSE OUTLINE

Maintenance and basic troubleshooting of the 6000 Series transmissions fitted with CEC 2nd generation electronic control

### TARGET TRAINEES

Qualified Tradesperson  
(or 3rd/4th Year Apprentices)

### CURRICULUM

- Documentation
- Model identification
- Basic construction
- Torque convertor operation
- Stall testing procedure
- Planetary gear set and clutch operation
- Hydraulic operation
- Operation of the CEC 2 electronic control system
- Maintenance requirements/servicing procedures
- Troubleshooting of mechanical, hydraulic and electronic faults

### PRACTICAL ACTIVITIES

- Identifying all external mechanical and electronic components
- Using the shift selector to perform range attainment and diagnostic data extraction
- Using Allison DOC diagnostic software
- Performing fault finding on the electronic control system

### PARTICIPANTS

Four to eight

### DURATION

Two days

### COURSE FEE

Upon request

# TERMS AND CONDITIONS

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## 1. APPLICATION

Applications for participation in Penske Power Systems (PPS) training courses are to be submitted in writing using the PPS application form included into this training program providing details of the desired course.

Submission of an application indicates recognition of the following conditions:

- The applicant is bound by their application until 6 weeks after its receipt by PPS.
- The contract is finalised on issue of a written acceptance of application by PPS. In the case of courses for which the maximum number of participants has already been accepted, the applicant will be informed and given details of the next available course.
- The data received with the application will be treated confidentially, in compliance with the current data protection legislation, and recorded for internal administration purposes. The applicant hereby acknowledges and accepts that any personal information received by PPS may be reasonably expected to be used for a secondary purpose associated with the application or conduction of the training course.

## 2. CANCELLATION

The contract may be cancelled in writing:

*By PPS*

- When the number of applicants does not allow economical completion of the course.
- In the event of sickness of the instructor or for any other important reason.
- Course fees already received in payment will be returned.
- No other form of redress is possible.

*By the customer*

- Free of charge up to four weeks prior the scheduled commencement of the course.
- In the case of cancellations received by PPS later than four weeks but more than 14 days, at the latest, prior the scheduled commencement of the course, 50% of the agreed fees shall be forfeit.
- In the case of cancellations received by PPS later than 14 days prior to scheduled commencement of the course, or by non-appearance of the trainee the full amount of fees shall be payable.
- The customer has the right, with no increase in cost, to send an alternative trainee to participate in any courses he has reserved and paid for.

## 3. EXECUTION DEVIATIONS

PPS reserves the right to provide a substitute instructor, to slightly modify, or up-date, the course curriculum and, with adequate notice, to change the course schedule and location. If the customer is unable to participate in a course due to modification of the schedule, he is entitled to a course reservation on another schedule.

## 4. QUALIFICATIONS

The qualifications listed in the course descriptions are prerequisites for the course participation. In the interests of all concerned, the instructor assigned to a specific course shall decide as to the participation of any trainee whose qualifications are not as specified.

## 5. COURSE FEES

Course fees are stated in the registration confirmation and are to net prices without discount or other form of rebate. Payments are to be effected as indicated on the registration confirmation. Payment by the due date is a prerequisite for participation in the training.

## 6. COPYRIGHT

PPS reserves all rights to the training documentation, including translation, reprints and copying, either the whole or extracts thereof. No part of the training documentation may be reproduced in any way, in particular by the employment of electronic systems, nor shall it be copied, dispersed or used for open publication, without the prior permission, in writing, of PPS.

## 7. COPYRIGHT PROTECTION

The software employed during courses of instruction is subject to copyright protection. The software may not be removed from the training areas, nor may it be copied either the whole or part thereof or otherwise rendered useable in any non-approved form. Rights of use of PPS software products, or other third parties, as far as these are required for completion of the course curriculum are included in the course fees for the duration of the course. All kind of documentation from PPS may not be copied without permission. We reserve the right to claim recompense for any damages whatsoever.

# TERMS AND CONDITIONS

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## **8. LIMITS OF LIABILITY**

The courses are prepared and executed with great care and expertise by instructors from PPS. Except in cases of gross negligence or serious/wilful misconduct PPS is not liable to the applicant in anyway whatsoever.

PPS shall not be liable for any indirect, special or consequential loss of any kind suffered by the applicant (including loss of profit, revenue or income, production, use, product, business, contracts, investment or other opportunity) arising out of or in connection with the application or the participation in the training course, whether in contract, tort (including negligence) or equity, under statute or otherwise.

No liability is accepted for the loss or damage to course participant's personal property during courses conducted in buildings and on property owned by PPS.

Notwithstanding any other provision in this document, PPS total aggregate liability in connection with the application or the training courses is limited to AU\$100,000.00.

## **9. PLACE OF JURISDICTION**

The place of jurisdiction for all controversies arising from the contract is the State of New South Wales. The parties hereby accept that the laws of that State shall apply exclusively to this application and the training course in general.



*Power Systems*

[technicaltraining@penskeps.com](mailto:technicaltraining@penskeps.com)

[penskeps.com](http://penskeps.com)

